DOCUMENT RESUME

ED 310 095 SP 031 402

AUTHOR Rush, Jean C.
TITLE Theory-Based Teaching: Problem Solving in Studio Art Instruction.
PUB DATE 29 Mar 89
NOTE 20p.; Paper presented at the Annual Meeting of the American Educational Research Association (San Francisco, CA, March 27-31, 1989).
PUB TYPE Speeches/Conference Papers (150) -- Information Analyses (070)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Aesthetic Values; *Art Education; Cognitive Processes; *Concept Formation; *Creativity; Nonverbal Communication; *Problem Solving; Research Needs; *Visual Arts

ABSTRACT

The call for more empirical research in art education during the 1950s seems to be a precursor of the contemporary move toward more systematic instruction in the visual arts. If making art employs nonverbal aesthetic concepts, then conceptual consistency and problem solving within studio instruction can facilitate students' acquisition, retention, and generalization of the aesthetic concepts that are the building blocks of artistic expression. The term "conceptual focus" describes the pedagogical mechanism that permits students to practice the cognitive skills used by artists during creative activities. (Author)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED310095

Theory-Based Teaching: Problem Solving in Studio Art Instruction

Jean C. Rush

Department of Art

The University of Arizona

Paper Presented to the Arts and Learning Special Interest Group

American Educational Research Association

San Francisco, California

March 29, 1989

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☐ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

J. C. Rush

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

BEST COPY AVAILABLE

Abstract

The call for more empirical research in art education during the 1950s seems to be a precursor of the contemporary move toward more systematic instruction in the visual arts. If making art employs nonverbal aesthetic concepts, conceptual consistency and problem solving within studio instruction can facilitate students' acquisition, retention, and generalization of the aesthetic concepts that are the building blocks of artistic expression. The term conceptual focus describes the pedagogical mechanism that permits students to practice the cognitive skills used by artists during creative activities.

Theory-Based Teaching: Problem Solving in Studio Art Instruction

A characteristic feature of the contemporary shift toward more systematic art education is the incorporation into curriculum and teaching of information derived from research. The growing affiliation between scholars and the classroom is exemplified by the Getty Institute for Educators on the Visual Arts, a Los Angeles summer staff-development program established in 1983. The Institute's staff development practices incorporate recent research findings on change (Hord, Rutherford, Huling-Austin, & Hall, 1987), and its discipline-based approach to art education is research-oriented in the following way.

In retrospect, it seems fair to say that the call for more empirical research in art education during the 1950s was an early manifestation of the move toward more systematic art instruction. Researchers recognized that the creative process is not as mysterious and closed to objective scrutiny and understanding as many artists and educators might like to believe. Discipline-based art education (DBAE) is a logical development from this objective and analytical point of view.

DBAE rests on a triangular theoretical structure outlined by Greer (1984), a curriculum researcher, whose facets he calls Content, Curriculum, and Context. Content refers to the four arts disciplines of aesthetics, criticism, history, and production); Curriculum refers to a written, sequential plan for instruction,

and Context refers to the adaptability and accountability of this approach within United States school systems. Each of the three facets has ideological roots in art education literature.

There appears to be a fourth as yet unexplored dimension in addition to the three specified by Greer, a dimension that accounts for the systematic approach to studio art instruction characteristic of DBAE (cf. Rush, in press). It, too, has ideological roots in research. Its features encompass the nature of aesthetic perception, concept formation and acquisition, the approach to design instruction at the Bauhaus, the scientific method, and the Deweyan use of problem solving as a test of learning.

Within the ideological context of this fourth dimension, art making may be considered a problem solving activity that employs nonverbal aesthetic concepts. When problem solving is incorporated into a conceptually consistent lesson format, it can facilitate students' acquisition, retention, and generalization of the aesthetic properties or nonverbal concepts that are the building blocks of artistic expression. This paper uses the term conceptual focus to describe the instructional mechanism that permits students to practice the cognitive skills used by artists during their creative activities.

Getty-funded staff-development programs in particular have employed university professors of art education with research experience to develop teaching materials that can translate theory into practice. One of these staff-development programs occasioned

the evolution of the format for an art lesson or unit plan (Rush, 1987; see Table 1) used in this paper to demonstrate conceptual focus. The plan's value for teachers lies in its structure, which ensures that a lesson or unit (a series of related lessons) is conceptually consistent.

More than a decade has passed since Broudy began to develop a method of systematic perception grounded in aesthetics literature known as aesthetic scanning (Broudy, 1988). Broudy also began to explore the usefulness of mental imagery for learning, one aspect of which is its use in problem solving, "regarded as the best test of formal schooling" (Broudy, 1987, p. 34). Ten years ago Rush began publishing the results of experimental studies on nonverbal concept formation in art (Kratochwill, Rush, & Kratochwill, 1979; Rush, 1979a, 1979b, 1984, 1987; Rush & Sabers, 1981).

Rush built her research on the work of artists like Klee and Albers who, during the early years of the century, established a pedagogical tradition at the Bauhaus that is still used today. Bauhaus teachers abstracted perceptual components of art and established a model of studio art curriculum found in university courses often entitled Basic Design or Fundamentals of Art. The foundational role of such courses in the studio education of 20th century artists is well known.

Since the Bauhaus, whether or not all visual artists have referred to the creative process as the solving of visual or compositional problems, a good case can be made for using this descriptive term. Problem solving by artists is the application

of one or more aesthetic properties from a vocabulary of elements and principles of art in order to create an artistic image that conveys meaning. Although artists may set and solve aesthetic problems during the creative act, most viewers of a completed work are unable to perceive the compositional challenges faced by its creator or the ways in which he or she resolved a succession of predicaments as the internal images assumed their external form.

By manipulating elements and principles such as line, color, balance, and rhythm, artists can express a variety of moods, ideas, or dynamic states. If art of many cultures, styles, and media contains aesthetic properties or concepts in common, then students of any age who make images must learn to apply them in order to become artists. This knowledgeable use of aesthetic properties for expressive purpose is the definition of the term artistic expression used in the following discussion.

Problem Solving and Conceptual Focus

The term problem solving comes from the sciences. Problem solving is the scientific method, the use of inductive and deductive reasoning. Art teachers like to refer to art education as a problem-solving activity because portraying art as a cognitive process helps them to justify their programs to school administrators. If asked, many would find it difficult to explain what an artistic problem is and when a student has solved one.

The scientific method is a process of perceiving a predicament, making educated guesses (forming hypotheses) about its cause, and predicting the results of attempts to resolve the

difficulty. The thought process might be described as "If I do this, then that is likely to happen." The scientist forms and tests hypotheses until able to verify his or her predicted consequences by direct observation.

Observing events, discerning a predicament, and forming an hypothesis (guessing what might be needed to resolve the predicament) is a process of induction. Testing the hypothesis by looking for predicted results, trying out an educated guess by doing something to see if it works, is a process of deduction. A scientist uses the outcomes of the reasoning process (the actual results) to verify an hypothesis by checking them against its predictions (Kemeny, 1959).

A scientist or an artist is knowledgeable enough in his or her discipline to perceive predicaments and form hypotheses to resolve them. Students can perceive only those predicaments for which their education has prepared them. Problem solving within a conceptually focused lesson therefore parallels the scientific method within the boundaries of a student's understanding.

In a studio art lesson a teacher should designate aesthetic problems to be solved that will assist students' artistic growth and also suggest hypotheses to be used in their solution. To do this, art teachers can draw from what Dewey called <u>warranted assertions</u> (Broudy, 1981), hypotheses that have been tested over and over again by members of the studio art discipline until they are commonly accepted as being true. These problems and hyupotheses can be simple or complex; they can address aesthetic

properties that are sensory (elements of art), formal (principles of art), technical (media techniques), or expressive (artistic expression).

The following four hypotheses are deliberately rudimentary, by way of example: a) If you vary the pressure on your pencil, then your resulting line will vary from dark to light (a sensory hypothesis); b) If you color a small area in the lower left part of your picture a bright warm color, then you can achieve balance by using a larger grayed area in the upper right (a formal hypothesis); c) If you wet the paper, then your watercolor will have a softer look (a technical hypothesis); d) If the edges of your clay are jagged, then the mood of your sculpture will be harsh (an expressive hypothesis).

Instructional problems are prescriptions for student activities based on credible aesthetic hypotheses. These hypotheses are nonverbal, even though they may be stated in words. Solving the problem requires learners to test these hypotheses by applying visual or tactile concepts learned earlier in the lesson or unit. Observer response to the completed images, either students' or teacher's responses, verifies that learners have used correct reasoning (application of aesthetic concepts) in solving the problem; verification is one function of a critique of completed student artwork.

Making artwork therefore can test students' understanding of aesthetic concepts when the making is a problem solving activity because its solution will display concept acquisition and

generalization. The problem solutions may be called tutored images because they are the result of tuition rather than intuition. The testing of a simple hypothesis will produce conceptual consistencies among all learners, while the testing of a complex hypothesis will result in more conceptual variation among images produced in a single art class.

The testing of diverse hypotheses within the parameters of any problem posed by an art teacher will lead to diverse solutions or evidence of divergent thinking. If some students testing hypothesis c_i for example, paint on paper that is damp but others paint on paper that has puddles of water, the characteristics of the paint will vary. Art teachers who can identify lesson concepts should always be able to predict the artistic form and content of tutored images by referring to the parameters of the problems posed.

Concept formation and aesthetic problem solving may be viewed as components of an instructional strategy called in this paper conceptual focus. The term refers to the way in which separate strands of the lesson come together with respect to the presentation and aplication of aesthetic concepts. When art making as a problem-solving activity focuses on selected concepts, it encourages students to be artistically expessive. When the solving of artistic problems is part of a conceptually focused lesson format, it can test pupil acquisition, retention, and generalization of the aesthetic properties or nonverbal concepts that are the building blocks of the visual arts.

Structure of a Conceptually Focused Studio Art Lesson

Art teachers know that students in a studio class must see examples of subject matter, media techniques, and finished work if they are to understand what is required of them. Describing these things in words does not convey enough information to permit nonverbal concept formation. All good studio art lessons include exemplary images, media demonstrations, and artwork by other students or professional artists.

Researchers know that concepts may be nonverbal, and that recognition of these nonverbal concepts is part of the process of understanding art. Learning to recognize artistic style, for example, is a process of nonverbal concept formation and acquisition (Rush, 1979). These aesthetic concepts are not precisely translatable because understanding language and images depend upon different kinds of cognitive processes.

According to the literature of concept formation, conceptually focused art lessons should be conceptually consistent and structured to teach a finite number of concepts. There are core aesthetic concepts common to each of the four arts disciplines as well as concepts that are discipline-specific (Greer, 1987). Conceptually focused art production or studio art instruction suggests that art teachers should define lesson content in terms of relevant concepts and modes of inquiry that are consistent across the arts disciplines as well as within studio art.

A conceptually focused lesson or unit (a series of related

lessons) for adults or children has three components necessary for problem solving in studio art: visual analysis, art production, and critical analysis (cf. Rush, 1987, for a longer description of these components). Visual analysis refers to the introduction, through vocabulary words and images, of the compositional problem to be solved and relevant hypotheses to be tested; art production refers to all image-making activities, including demonstration of media techniques; critical analysis refers to the recognition of aesthetic concepts central to the lesson in tutored images by students and in landmark works by professional artists. All three components must be present and conceptually consistent if the art production is to be a problem-solving activity.

The parameters of the problem and the hypotheses to be tested appear in a conceptually focused lesson or unit plan (see Table 1) as the goal or overview (teacher's intention), specific learning objectives, vocabulary words, vocabulary images, and criteria for the evaluation of artwork. The plan in Table 1 illustrates a conceptually focused lesson using fourth- to eighth-grade activities from the CRIZMAC Master Pack (Mack & Christine, 1985) resource materials. Master Pack lessons provide a convenient example of conceptual focus because they are published curriculum supplements that are available for further reader scrutiny; but any teacher may use any studio art project, published or unpublished, in a conceptually focused way.

In the sample activities outlined in Table 1, students used acrylic paint to compose a recognizable still life that

incorporates compositional and technical characteristics of Vincent Van Gogh's painting style. Students drew and then painted a still life, incorporting style concepts including color use and brush techniques to create texture. In the lesson illustrated, students learned style concepts by studying color reproductions of Van Gogh paintings and applied them to the problem of drawing and painting a real still life of flowers in a vase.

In a conceptually focused lesson teachers present the problem to be solved in terms of its aesthetic properties or concepts by linking words and images in a limited or focused aesthetic scanning (Broudy, 1988) activity. Vocabulary words define concept attributes; vocabulary words are then illustrated by art or real-world vocabulary images (see Table 1), which can be real objects, real art, photographs, slides, filmstrips, or art reproductions depending on the resources and desires of the teacher. The art history portion of the CRIZMAC has been omitted in order to emphasize the mechanism of perceptual learning; the nature of historical information makes it irrelevant to the process of aesthetic perception under discussion, even though it is important for other reasons.

Studio art lessons are conceptually focused only when they contain a problem defined well enough that its solution can be verified. The means by which the problem solution is to be verified appear in the evaluation criteria that the teacher presents to students before art production begins, and with which teacher and students critique the images students produced while

testing lesson hypotheses during the lesson. These criteria should be extensive enough and specific enough to describe a completed tutored image that corresponds to the parameters of the problem (see Table 1, Evalation of Artwork); students and teacher can then compare actual with predicted results.

Solving the lesson problem tests whether or not students can apply specific aesthetic concepts; therefore, it tests whether or not concepts have been learned. Learning and application are not synonymous. Students have three and possibly four opportunities in concetually focused units to generalize concepts learned during visual analysis: first, while applying aesthetic concepts in order to solve the lesson problem (test the hypotheses); second, during aesthetic scanning activities following production, when concepts learned are identified in the works of other students (evaluation of artwork) and adult artists (critical analysis); third, if the teacher poses a second, different problem using the same concepts and skills (as in Table 2); fourth, if the student subsequently poses his or her own problem during the making of spontaneous rather than tutored images.

All conceptually focused studio lessons should include the first two opportunities for concept generalization described above. More opportunities to generalize concepts within a single conceptually focused unit produces greater concept strength than a lesson in which fewer opportunities for generalization occur. Repeated concept use is one advantage of a sequential curriculum.

Conceptual Focus and Creativity

Teaching students to be artistically expressive differs significantly from the most prevalent approach to children's art education during the last 40 years, which has sought to encourage creative self-expression. In creative self-expression "art is seen as an instrument for developing what is assumed to be each child's inherent creativity and [idiosyncratic] expressive abilities (Clark, Day, & Greer, 1987). The self-expressive approach relies on children's maturation and inherent artistic aptitude or talent to result in learning when art-making activities are spontaneous, particularly with respect to their imagery.

Art teachers who use a problem-solving approach assume that learning the language of art requires instruction even for the talented. Children without formal or informal studio art education do not grow up to be artists because they lack the requisite artistic concepts and skills (cf. Feldman, 1980). When teachers pose problems for students to solve, they allow students to be expressive in the same way that artists are, that is, by incorporating into their images an aesthetic vocabulary.

There is a correlation between lesson objectives and the form of images produced during a conceptually focused studio art lesson or unit. Conceptual consistencies among children's images reflect the problem posed and are the signs by which learning may be inferred. If an outsider observes a number of images from a single class, he or she may infer conceptual consistencies by

noting compositional similarities among images made by different children.

Tutored images reflect the complexity or simplicity of the problems being solved or the hypotheses being tested. No single conceptually focused lesson or unit teaches everything. The more complex the lesson objectives, the more compositional variation will appear in children's problem solutions. Thirty different solutions to a problem are acceptable only if the differences occur by testing diverse hypotheses or in the aesthetic context within which the problem solution lies.

Problem solving is common to art and nonart disciplines; it is a uniquely human activity. Studio lessons that do not pose problems to solve are at best uninstructive and at worst prescriptive to the point of producing rote learning. Problem solving or hypothesis testing requires active participation by students in the process most characteristic of the visual arts: expressing meaning through the creation of imagery.

Stating that art education includes sequential instruction in four disciplines describes only its external configuration. The extent to which art instruction relies on conceptual focus and problem solving for its effectiveness in the productive domain is a better measure of the extent to which it presents a paradigm different from creative self-expression. Current misunderstanding of the effects of systematic instruction in studio art suggests a need to extend the explication of conceptually focused instruction in order to understand how it can encourage students' artistic expression.

References

Broudy, H. S. (1981). Truth and credibility: The citizen's dilemma. New York: Longman.

Broudy, H. S. (1987). The role of imagery in learning. Los Angeles: J. Paul Getty Trust.

Broudy, H. S. (1988). The uses of schooling. New York: Routledge.

Clark, G. A., Day, M. D., & Greer, W. D. (1987). Discipline-based art education: Becoming students of art. The Journal of Aesthetic Education , 21 (2), 129-193.

Feldman, D. H. (1980). Beyond universals in cognitive development . Norwood, NJ: Ablex.

Hord, S. M., Rutherford, W. L., Huling-Austin, L., & Hall, G. E. (1987). Taking charge of change. Alexandria, VA: ASCD.

Kemeny, J. G. (1959). A philosopher looks at science. New York: Van Nostrand.

Kratochwill, C. E., Rush, J. C., & Kratochwill, T R. (1979). The effects of descriptive social reinforcement on creative responses in children's easel painting. Studies in Art Education , 20 (2), 29-39.

Mack, S. A., & Christine, D. R. (1985). CRIZMAC Master Pack. Tucson, AZ: Authors.

Rush, J. C. (1979a). Acquiring a concept of painting style. Studies in Art Education , 20 (3), 43-51.

Rush, J. C. (1979b). Can the arts teach thinking? A look at artistic conceptual behavior. Art Education , 32 (3), 6-8.

Rush, J. C. (1984). Bridging the gap between developmental psychology and art education: The view from an artist's perspective. Visual Arts Research , 10 (2), 9-14.

Rush, J. C. (1987). Interlocking images: The conceptual core of a discipline-based art lesson. Studies in Art Education , 28 (4), 206-220.

Rush, J. C. (in press). Coaching by conceptual focus: Problems, solutions, and tutored images. Studies in Art Education.

Rush, J. C., & Sabers, D. L. (1981). The perception of artistic style. Studies in Art Education , 23 (1), 24-32.

Southwestern Regional Laboratory (SWRL). (1982). SWRL elementary art program. Bloomington, IN: Phi Delta Kappa.

Table 1: PLANNING A DISCIPLINE-BASED ART LESSON

The following lesson plan is adapted from the CRIZMAC Master Pack (Mack & Christine, 1985). The art history component of this lesson has been omitted in order to emphasize teaching of aesthetic concepts.

TOPIC: VINCENT VAN GOGH GRADE: Grades Four through Eight

OVERVIEW (TEACHER'S INTENTION): Students will use acrylic paint to compose a recognizable still life that incorporates compositional and technical characteristics of Vincent Van Gogh's painting style.

LEARNING OBJECTIVES:

VISUAL ANALYSIS	ART PRODUCTION	VISUAL/CRITICAL ANALYSIS
On completing this lesson each child will be able to		
Identify in a real or painted still life Simplified shapes Center of interest Active, expressive brush strokes Texture Analogous colors Dominant color Tints and shades	Paint a still life incorporating Simplifed shapes Center of interest Active, expressive brush strokes Texture Analogous colors Dominant color Tints and shades	Identify art concepts in eight paintings by Van Gogh and three paintings by Monet

---

VISUAL ANALYSIS:

VOCABULARY WORDS: (see Demonstration, below)

Still life	Texture	Impressionism
Simplifed shapes	Analogous colors	Claude Monet
Center of interest	Dominant color	Postimpressionism
Active, expressive brush strokes	Tints and shade	Vincent Van Gogh

---

VOCABULARY IMAGES:

Van Gogh:	Bedroom at Arles	Monet:
Potato Eaters	Red Gladioli	Regatta at Argenteuil
Portrait of Artist	Sunflowers	Waterlillies
Self-Portrait w/ Bandaged Ear	Sunflowers (dried)	Actual Still Life
	Irises	

ART PRODUCTION:

MATERIALS:

12 x 18" white paper	Acrylic paints, brushes	Paper plates
Pencil, eraser	Water containers	Paper towels

DEMONSTRATION:

The teacher uses the materials described above to demonstrate ways to

1. Make a drawing with lines that a) describe simplified shapes of petals, flowers, leaves, stems, vase; b) a center of interest (more detail, largest shape, unusual shape), while looking at a real still life of flowers..
2. Prepare a paper plate palette containing three analogous colors of acrylic paints, black, and white.
3. Make a recognizable painting of the still life containing a) a center of interest; b) texture produced by active, expressive brushstrokes; c) a limited palette (three analagous colors, a dominant color, tints and shades).

CLASS ACTIVITY:

Children use prescribed art materials (see Materials, above) to make an image that will display the characteristics listed in Evaluation of Artwork (see below).

EVALUATION OF ARTWORK:

Each child makes an image that will contain

1. A recognizable still life of flowers.
2. Shapes that touch or extend off the paper on at least two sides.
3. A center of interest
4. Texture produced by active, expressive brush strokes.
5. Three analagous colors.
6. A dominant color.
7. Tints and shades of each color mixed by adding black and white.

VISUAL/CRITICAL ANALYSIS:

The large color reproductions of paintings by Van Gogh and Monet used to introduce Vocabulary Images also serve for critical analysis.

Note: This lesson plan format was adapted from one used at Western Australian College of Advanced Education, Mount Lawley, W.A., Australia, 1985.